

NOTES ON THE MARINE-FRESHWATER GERRID GENUS *RHEUMATOMETROIDES* (HEMIPTERA, GERRIDAE) OF PAPUA NEW GUINEA¹

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The marine-freshwater gerrid *Rheumatometroides* Hungerford and Matsuda from Madang Province, Nagada Harbour were studied in February-March 1990 and the results compared with data from West New Britain, Kimbe area. *Rheumatometroides serena* sp. n. is described from Nagada Harbour, and compared with *R. browni* Hungerford and Matsuda, originally described from Solomon Islands and now recorded from West New Britain. Variation between females of *R. browni* from West New Britain and Solomon Islands is commented upon. Notes are given on the habitat preferences of both species in Papua New Guinea and their localised distribution compared with other marine bugs (Gerridae and Veliidae).

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The genus *Rheumatometroides* Hungerford and Matsuda (1958) was described from the Solomons Islands, Kolombangara. No comment was made on the habitat of this genus. E. S. Brown, who collected the original series, describes the habitat in his field notes as 'surface of river running into lagoon (Jack Harbour). Slow flowing'. Specimens were collected on the 1st and 14th October, 1954. Matsuda (1960) redescribed the genus comparing it with other genera of the Trepobatinae Matsuda. Andersen and Polhemus (1976) refer briefly to *Rheumatometroides* and a closely related genus *Stenobates* Esaki, commenting that such records as there are indicate that both are marine occurring in estuaries and nearshore localities. Lansbury (1989) briefly summarises textual references to date.

In 1990 I visited the Christensen Research Institute (CRI), Madang, Papua New Guinea and the north coast of West New Britain, Kimbe area, to study marine bugs. A new species of *Rheumatometroides* was found at Nagada Harbour (CRI) and *R. browni* Hungerford and Matsuda was found in both freshwater and the intertidal zone in West New Britain, and what appears to be a form identical with that from Nagada, offshore in West New Britain.

Samples were collected both by handnet during daylight and other samples were obtained using a light trap run from the end of the CRI jetty.

Two immature stages of *R. browni* and a late instar of the new species are briefly described.

SYSTEMATICS

Rheumatometroides serena sp. n. (figs. 1-20)

Type material. – Holotype male: Papua New Guinea, Madang Province, Madang, Nagada Harbour, collected between 22.ii and 16.iii.1990, collected at light (mvlt) (in OXUM). – Paratypes 39 ♂ 32 ♀ at mvlt, 43 ♂ 16 ♀ under jetty and in coral rubble close inshore (in OXUM, Forest Research Institute, Lae, coll. Christensen Research Institute, Madang, and RMNH Leiden)

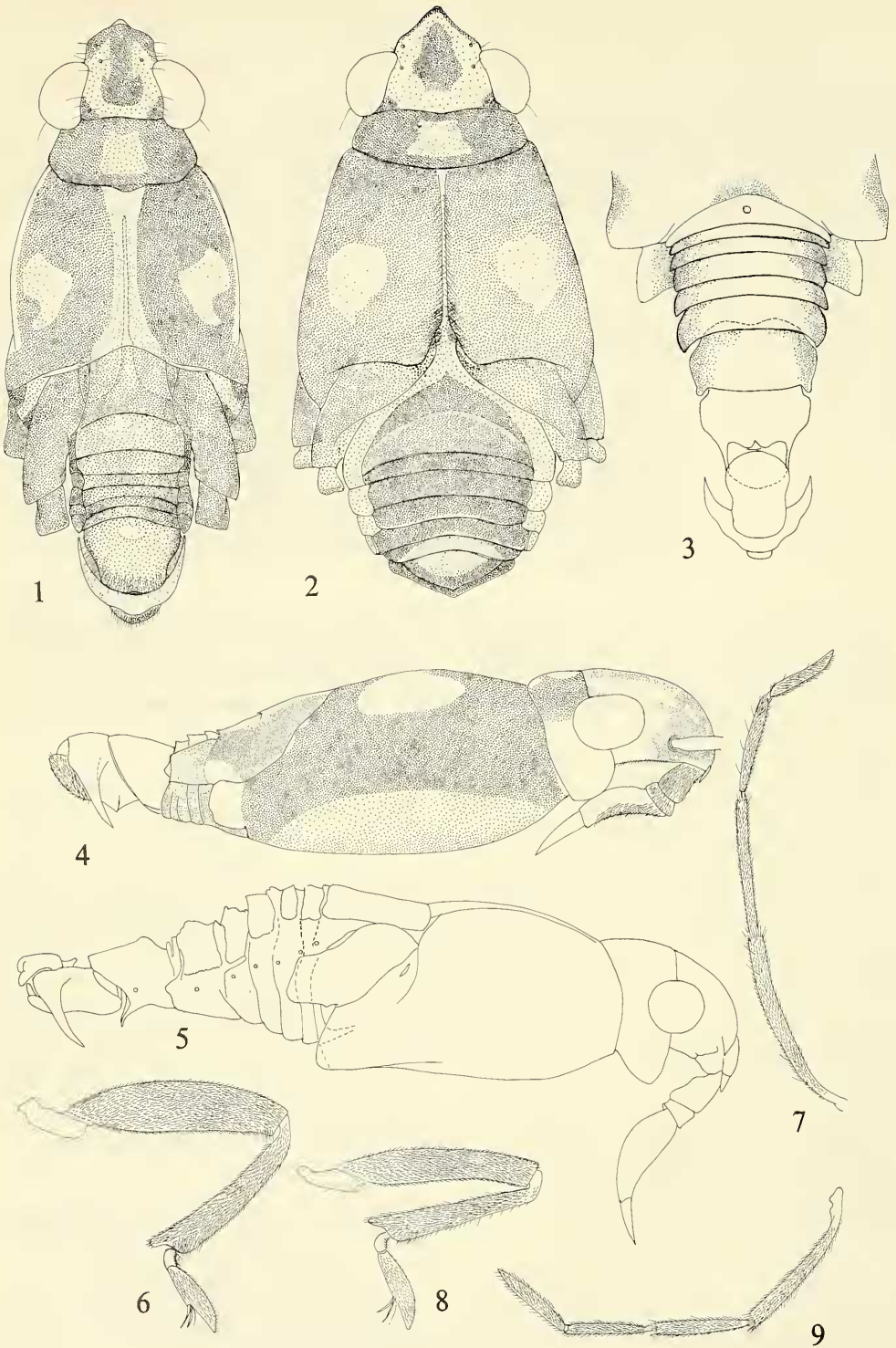
Additional material. – West New Britain, Tamari, 100 m offshore, 30.iv.1989. R. N. B. Prior, 1 ♂; West New Britain, Tamari Beach, June 1989, R. N. B. Prior, 5 ♂ 2 ♀. – Immature stages: Nagada Harbour, 23.ii-14.iii.1990, 86 specs. at mvlt; 14 in coral rubble and under jetty; West New Britain, Tamari, 100 m offshore, 30.iv.1989. 1 spec.; Tamari Beach, June 1989, R. N. B. Prior, 1 spec.

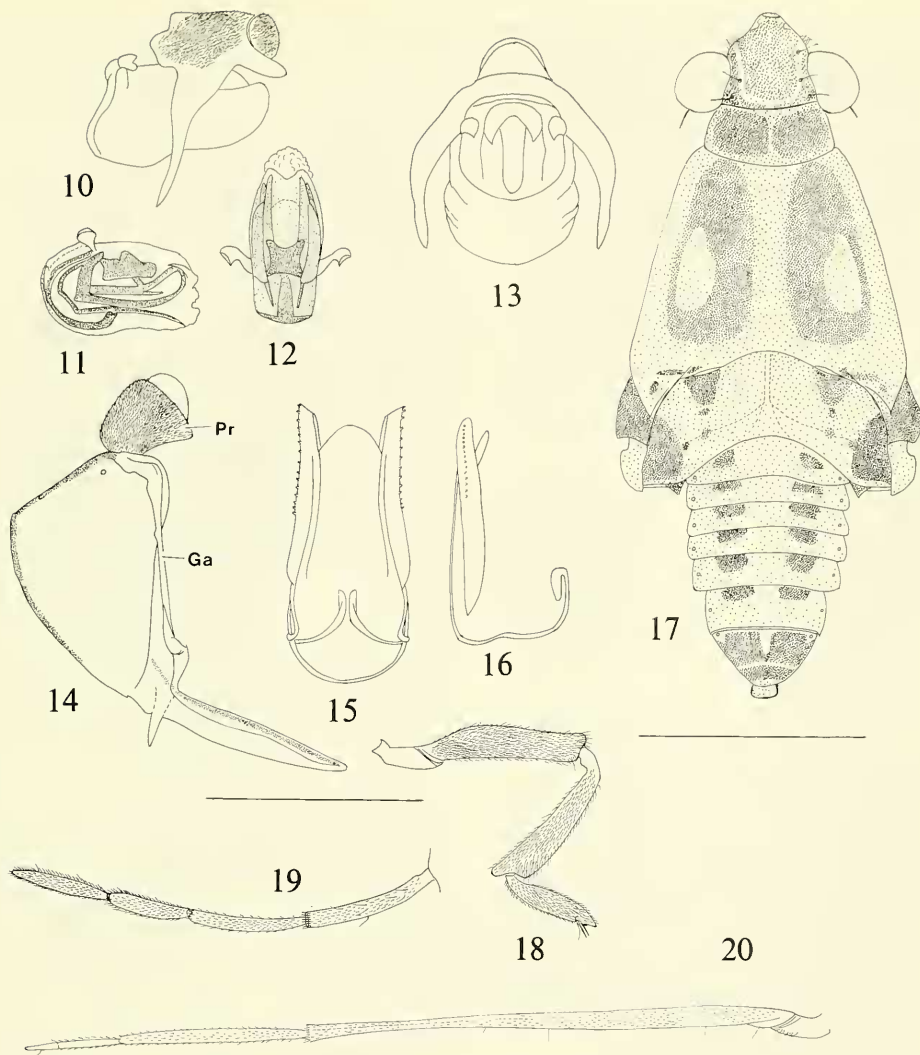
Description

Adult apterous. Males 2.72-3.1 mm long, maximum width 1.24-1.32 mm, females 2.68-3.0 mm long, maximum width 1.44-1.60 mm.

Coloration. – Male: Head mesially with a broad longitudinal 'anchor-shaped' bluish-black stripe extending from anterior margin almost to posterior margin between eyes. Posterior margin adjacent to in-

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Figs. 10-20. *Rheumatometroides serena* sp. n. – 10-16, paratypes. – 10, suranal plate and genital segment, ♂; 11, genital sclerites side view, ♂; 12, ventral aspect of sclerites, ♂; 13, ventral aspect of suranal plate processes, ♂; 14, ovipositor side view, ♀; 15, ventral aspect 2nd gonapophyses, ♀; 16, side view 2nd gonapophyses, ♀. Abbreviations Ga gonangulum, Pr base of proctiger. Scale line 0.5 mm. – 17-20. Immature. – 17, dorsal aspect; 18, front leg; 19, antenna; 20, hind leg. Scale line 1 mm.

ner margin of eyes bluish black. Remainder of head orange yellow. Pronotum bluish-black with a variably shaped orange yellow blotch mesially. Mesonotum bluish-black with two (1+1) orange yellow blotches, mesially mesonotum appearing rather paler. Metanotum and tergites bluish-black evanescent.

Eighth tergite yellowish brown, laterally bluish-black. Suranal plate pale yellow, processes distally black. Connexival segments 1-5 orange brown, remainder bluish black.

Head. Ventrally yellow. Rostrum pale to dark brown. Antennae black, proximal ventral margin of

Figs. 1-9. *Rheumatometroides serena* sp. n. paratypes. – 1, male dorsal aspect; 2, female dorsal aspect; 3, male abdomen ventrally, 4, male side view; 5, male (cleared in KOH and lactic acid); 6, male front leg; 7, male antenna; 8, female front leg; 9, female antenna. Scale line 1 mm.

first segment pale brown. Pronotum laterally dark brown-black, propleura and ventrally pale yellow. Mesopleura bluish-black graduating ventrally to pale yellow. Metathoracic spiracle orange. Dark abdominal coloration fading laterally, sternites pale yellow. Metacoxal plates bluish-black.

Legs. Front leg, inner margin of femur and tibia yellowish brown, outer margins of femur and tibia black. Middle and hind legs black.

Female: Superficially resembling male, dark area on head reduced. Tergites and connexivum tend to be uniformly dark brown to black. Depending upon the angle of filtered light on dry mounted specimens, the dark brown-black coloration especially of the pronotum, mesonotum, metanotum and adjacent tergites are partially covered by areas of pale bluish evanescent coloration.

Structure. – Male: Elongate parallel sided (fig. 1). Head length slightly greater than maximum width across almost straight posterior margin between eyes. Narrowest interocular space about $0.75 \times$ posterior width. Head sometimes slightly dilated in front of eyes. Maximum eye width less than length and $0.66 \times$ head length. Inner margin of eyes sinuate. Rostrum 8 : 13 : 9. Antenna male (fig. 7) segment 1-4 32 : 23 : 16 : 15.

Pronotum $0.25 \times$ longer than head. Antero-lateral margins divergent, straight, postero-lateral margins convergent, hind margin straight. Mesonotum just over 2 median pronotal length, mesially with a shallow longitudinal depression becoming obsolescent anteriorly, posterior margin concave. Metanotum mesially about $0.4 \times$ length of mesonotum with a faint Y-shaped figure. First visible tergite clearly longer than remainder, ratios 5 : 3 : 1.5 : 1.5 : 1.5. Eighth tergite as long as preceding five, lateral margins fringed with long hairs. Suranal processes curving round segment, directed cephalad. Metacetabula parallel from posterior of mesonotum. Connexivum strongly reflexed and folded onto dorsum.

Metasternum about 1.2 length of mesosternum. Omphalium prominent, located midway between anterior and posterior margins (fig. 3). A male partially cleared in KOH and examined in a 50% lactic acid solution has extended part of thorax and abdomen. Tergites are clearly visible and abdominal spiracles are aligned pleurally. The intersegmental membranes are narrow compared with tergal plates. The eighth segment bears a prominent spinose projection ventrally. This segment is normally aligned so that dorsal surface is continuous with 7th tergite and ventral projection partially encloses suranal plate segment (fig. 5).

Legs: Front femur broad, slightly curved (fig. 6), flattened on inner surface, tibia more strongly flattened with a prominent projection on inner distal margin. Distal ventral margin of femur and outer dis-

Table 1. Proportions of leg segments of *Rheumatometroides serena* sp. n.

	Femur	Tibia	Tarsus I	Tarsus II
Male front leg	35	31.5	3	13
Female front leg	35	30.5	3.5	15
Male middle leg	90	101	40	35
Female middle leg	87	102	40	35
Male hind leg	94	35	6	10
Female hind leg	91	35	6	11

tal margin of tibia with clusters of longer hairs. Tarsi flattened, first very short, 2nd shining. Middle and hind femora moderately robust. Proportions of leg segments (table 1).

Genitalia: Suranal plate and processes large, dorsally plate pilose. Genital capsule partially enclosed by lateral processes (fig. 10). Ventral aspect of suranal plate and genitalia (fig. 13). Internal structures a confusing array of paired sclerites (figs. 11, 12). Base of phallus, a heavily sclerotised plate with slightly projecting rounded corners. Parameres small and symmetrical.

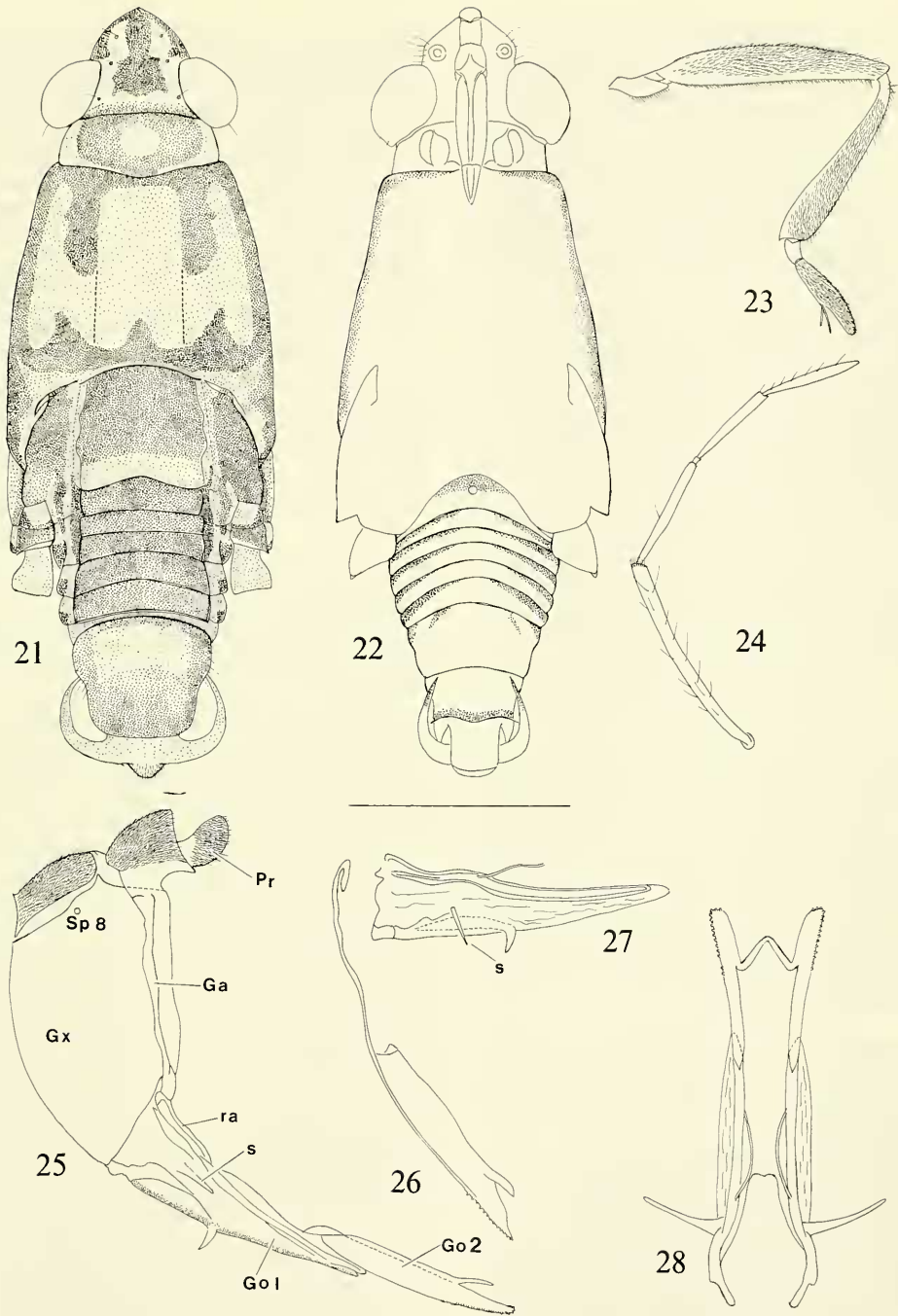
Female: Robust trapezoidal form (fig. 2). Head length equalling maximum width across slightly concave margin between eyes. Narrowest space $0.6 \times$ posterior width. Maximum eye width less than length and about $0.35 \times$ head length. Antennal segments 1-4 (fig. 9) 27 : 17 : 15 : 16.

Pronotum about $0.5 \times$ longer than head, lateral margins slightly rounded and diverging, posterior margin evenly shallowly rounded. Mesonotum $3 \times$ median pronotal length, mesially with a prominent longitudinal sulcus. Inner lateral margins of mesonotum curved inwardly, reflexed margins with numerous hairs increasing in length and density distally. Metanotum about 0.5 or less median length of mesonotum, posterior margin shallowly concave. Metanotum midway with a suture-like emarginate line extending from inner margin of connexivum. Visible tergites more or less subequal in length. Metacetabula sharply convergent anteriorly. Omphalium not conspicuous. Sternites increasing in length distally, 3 : 3.9 : 4 : 4.5 : 5 : 11.

Genitalia (figs. 14-16). First gonocoxa triangular, inner margin lightly sclerotised and reflexed inwards. Gonangulum long originating near spiracle below

Table 2. Proportions of leg segments of *Rheumatometroides serena* sp. n. Immature stages.

	Femur	Tibia	Tarsus
Front leg	25	23	16
Middle leg	74.5	84	65
Hind leg	74.5	30	16



Figs. 21-28. *Rheumatometroides browni*. — 21-24. Male Tamari Creek. — 21, dorsal aspect; 22, ventral aspect; 23, front leg; 24, antenna. Scale line 1 mm. — 25-28. Female, Kapiura. — 25, ovipositor side view; 26, second gonapophysis; 27, side view of first gonapophysis; 28, ventral aspect of first and second gonapophyses. Abbreviations Ga gonangulum; Pr proctiger; sp 8 8th spiracle; Gx gonocoxa; ra ramus; s stylus; Go 1 Go 2 first and second gonopophyses. Scale line 0.5 mm.

proctiger, attached to first gonapophyses, which has two (1+1) stylus-like projections basally, upper margin of first gonapophyses sclerotised. Second gonapophyses are longer than first and lightly sclerotised, widely separated and joined by a membrane which is raised lobe-like distally. Lateral margins reflexed bearing on outer margin a row of blunt spines (figs. 15, 16). Attached to proximal end of 2nd gonapophyses, a pair of lightly sclerotised ramus curving upwards and expanded into a pair of lobes joined by a membrane (fig. 16).

Immature stage 4th or 5th instar (figs. 17-20): Head dark brown with a narrow pale yellow U-shaped figure close to inner margin of eyes and across posterior margin of head. Pronotum with two (1+1) dark brown rectangular blotches. Mesonotum pale yellowish brown with two (1+1) large almost oval dark brown patches each with elongate pale yellow blotch closely resembling adult pattern. Metanotum yellow, laterally with an almost triangular dark brown patch. Anteriorly to insertion of middle and hind legs with variable triangular dark brown patches. Tergites with pairs of dark brown patches. Abdominal spiracles placed medially. Mesonotum $3 \times$ median length of pronotum and $2 \times$ length of metanotum. Anterior margin of first tergite deeply emarginate, tergites 2-5 subequal in length, tergites 6 and 7 clearly longer (fig. 17).

Front leg, femora more or less parallel sided resembling that of adult female, tibia strongly produced with a tuft of longer hairs distally (fig. 18). Hind femur moderately robust with an interrupted row of spine-like projections, ventral margin with four trichobothria-like hairs arising from circular areas devoid of fine short hairs. Tibia and tarsus to a lesser extent with short fine hairs (fig. 20). Antennae (fig. 19): first segment basally pale, remainder of first and other segments brown, segment 1-4 19 : 13.5 : 11 : 13.25. See also table 2.

Etymology. – A noun in apposition. This species is dedicated to Mrs Serena Jebb, wife of the Director, Dr. M. Jebb of the Christensen Research Institute, Madang, P. N. G.

Remarks. – *R. serena* with *R. aqaqa* Lansbury and *R. metawa* Lansbury (Solomon Islands) form a distinct group based on the male front tibia, which is strongly produced, whereas that of *R. browni* is not produced. The omphalium of *R. serena* is in the centre of the metasternum as are all the foregoing insects. According to Matsuda (1960) the omphalium of the closely allied *Stenobates* is more conspicuous and located at the intersegmental suture between the meso and metasternum. Andersen (1982) distinguishes *Stenobates* from *Rheumatometroides* by the former having the metasternum distinctly produced, whereas

the latter is not produced.

Rheumatometroides serena is distinguished from *R. aqaqa* and *R. metawa* (only males known) by the colour pattern. The 3rd and 4th antennal segments of *R. metawa* are almost subequal as are those of *R. serena*, whereas *R. aqaqa* has the 4th segment longer. *Rheumatometroides serena* also resembles *R. metawa*. However, *R. serena* has a shorter mesonotum 2 median pronotal length compared with *R. metawa*, mesonotum $2.75 \times$ longer than median pronotal length. The anterior suture between the meso and metasternum of *R. metawa* is antero-mesially produced, in *R. serena* it is evenly rounded.

***Rheumatometroides browni* Hungerford and Matsuda**
(figs. 21-43)

Rheumatometroides browni Hungerford and Matsuda, 1958: 203-206. – Matsuda 1960: 351-353, Lansbury 1989: 63-65.

Description

Adult apterous. Males 3.2-3.48 mm long, maximum width 1.2-1.36 mm, females 3.2-3.48 mm long, maximum width 1.28-1.56 mm.

Coloration. – Male: Head, interocular space with a median longitudinal shining black stripe, inner margins of eyes and front of head black, remainder pale yellowish brown. Pronotum black with a median yellow blotch, lateral margins variably narrowly pale yellow. Mesonotum black with a large pale yellow W-shaped area. Metanotum black with silvery pubescence. Tergites black with silvery pubescence. Eighth tergite basally broadly pale yellowish brown, lateral margins and distally graduating to shining black. Suranal plate dorsally brown, lateral processes paler with tips darker. Propleura pale yellow, upper margins of mesopleura black with slight silvery pubescence, distal lower margin with brown stripe. Metacetabula dark brown to black with silvery pubescence and scattered pale yellow blotches. Connexivum pale brown basally, upper margins with black markings (fig. 21). Underside of head, prosternum and metasternum pale creamy yellow, sternites like-colored, lateral margins suffused with brown-black (fig. 22). Rostrum basally pale yellow graduating to black. Base of first antennal segment pale yellow, remainder of segments black. Legs, proximal underside of front coxae, femur, middle and hind femora pale yellow, remainder dark brown-black.

Female: Not differing in broad details from male. Tergites tend to be more densely covered with silvery pubescence. Connexivum uniformly brown with patches of silvery pubescence along outer margins. Sternites uniformly pale creamy yellow.

Structure. — Male: Elongate parallel-sided (fig. 21). Head length subequal to widest interocular space distally. Maximum eye width $0.75 \times$ eye length and about half median head length. Rostrum 12 : 12 : 10. Pronotum $0.3 \times$ longer than median head length, lateral margins rounded, median length about 2 lateral margins. Posterior margin slightly emarginate. Mesonotum mesially slightly depressed longitudinally. Metanotum depressed sloping caudad, less than $0.5 \times$ median length of mesonotum, lateral margins sinuate. Posterior margin with a narrow transverse band of silvery pubescence. Tergites short with transverse bands of silvery pubescence. Eighth tergite longer than metanotum, lateral margins sinuate and pilose (fig. 32). Suranal plate short with a pair of processes directed cephalad. Connexivum strongly reflexed and folded over dorsum. Metacetabula diverging from posterior margin of mesonotum. Mesosternum long, metasternum $0.9 \times$ length of mesosternum. Omphalium located centrally, lateral margins of metasternum pilose (fig. 22).

Genitalia: Abdominal segment 8 dorsally and laterally covered with fine hairs. Suranal plate densely pilose, dorsally processes large, inner margin almost straight. Ventrally segment enclosing capsule distad pilose. Phallic organ is partially inflated (fig. 33). Layout of structure broadly agrees with Brooks (1960) interpretation (fig. 33). Sclerotised structure within inflated organ is assumed to be dorsal plate of vesica. Endosoma figured by Brooks (1960) is broadly similar to fig. 34. Ventral plate attached to basal plate and connected to dorsal sclerite of vesica. Parameres symmetrical, small and rounded (fig. 35).

Female: Pronotum 0.7 longer than median head length, lateral margins slightly rounded, short about 0.3 median length, posterior lateral margins sinuate. Mesonotum 3 median pronotal length, postero-median margins straight, postero-lateral margins directed obliquely caudad against outer margin of metacetabula. Mesonotum mesially sulcate. Metanotum triangular, broad distal margin covered with silvery pubescence. Metanotum about $0.5 \times$ length of mesonotum. Tergites with distal margins more or less straight, five distal segments with variable areas of silvery pubescence. Metacetabula diverging from posterior margin of mesonotum. Mesonotum length 7 length of metasternum. Omphalium close to anterior margin of metasternum.

Genitalia (figs. 25-28). (Kapiura form): First gonocoxa plate-like elongate, inner margin evenly curved, outer margin slightly sinuate. Tergal margin narrowed dorsally pilose (fig. 25). Gonangulum narrow, heavily sclerotised, originating near dorsal margin of gonocoxa. First gonapophyses extending beyond 2nd gonapophyses, distally bluntly serrate along latero-ventral margins. First gonapophyses with a pair of

long stylus-like projections (figs. 25, 28). Second gonapophyses basally attached to first gonapophyses which has a spatulate projection ventrally (figs. 25, 27). Membrane between 2nd gonapophyses distally turned upwards and slightly carinate mesially. Proximally 2nd gonapophyses with a pair of elongate ramus terminating in two (1+1) lobes (fig. 26).

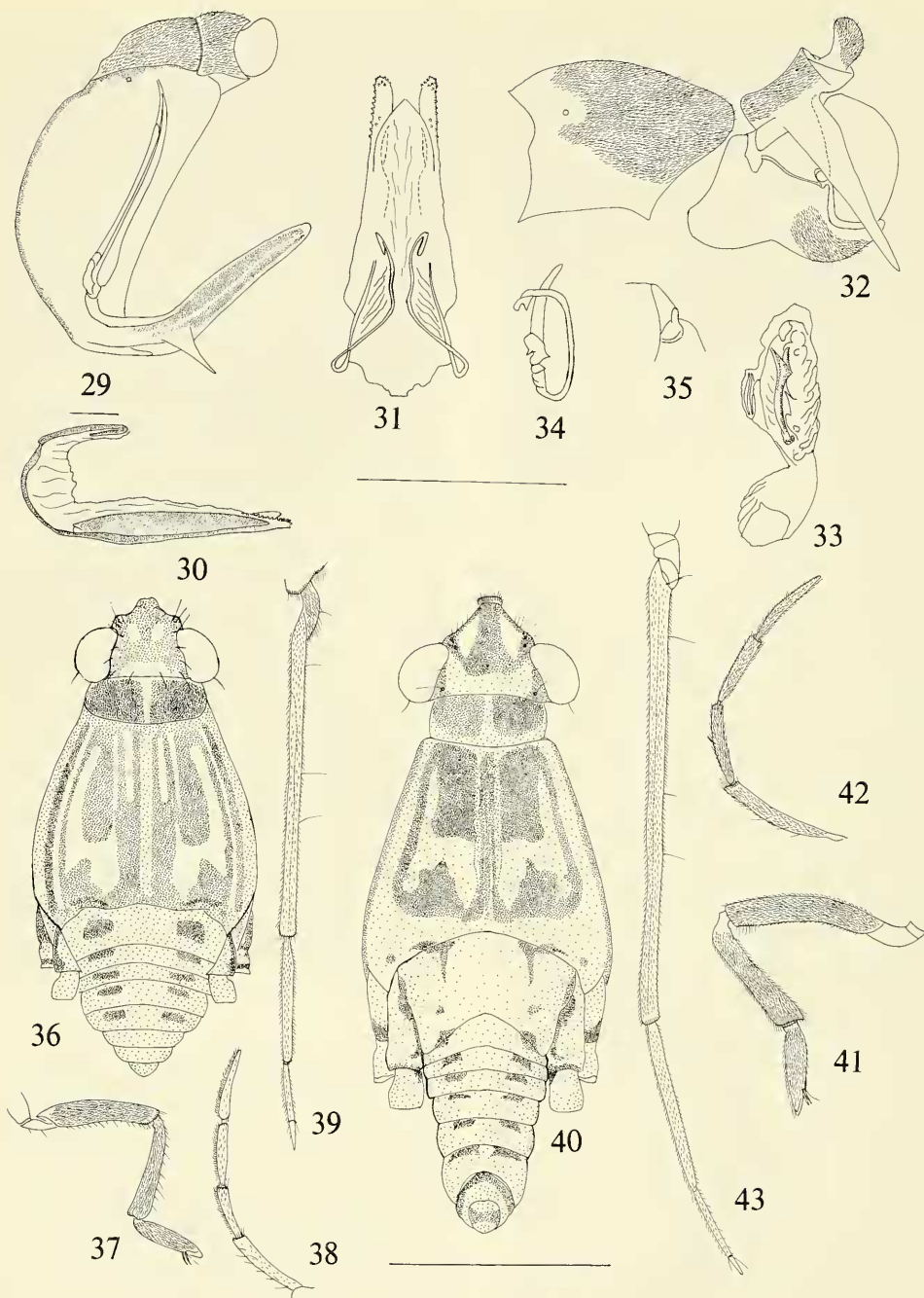
Female genitalia (figs. 29-31) (form from Kolombangara, Solomon Islands): First gonocoxa plate-like, appearing almost parallel sided, inner margin reflex and heavily sclerotised, tergal margins evenly curved (fig. 29). Gonangulum narrow, heavily sclerotised, attached to gonocoxa by an elongate membrane. First gonapophyses sclerotised, proximally with two (1+1) stylus-like projections (fig. 29). Second gonapophyses sclerotised, distally with a series of blunt projections. The two lobes of 2nd gonapophyses joined by a strong convoluted membrane, distally bluntly acuminate. Proximally attached to membrane, a pair of ramus terminating in two lobes (figs. 30, 31).

Legs (table 3): Male front femur, lower margin straight, inner surface of femur and tibia slightly flattened, tibia slightly produced distally, tarsi flattened (fig. 23). Middle femora more robust than hind femora. Antennal segments 1-4 male (fig. 24) 32 : 19.5 : 20 : 21.5, female 31 : 19 : 17 : 22.

Immature stages: Third (?) instar, partially cleared and slide mounted (figs. 36-39): Head pattern mostly dark brown with two pale areas anteriorly, posterior margin medially broadly pale brown. Antennae light brown, internodal pieces visible between segments 2-4 with a continuous fringe of hairs along outer margin (fig. 38). Pronotum largely dark brown, eyes very slightly overlapping antero-lateral margins of pronotum. Mesonotum with a complex pattern of light and dark brown linear stripes. Metanotum with two rectangular dark brown patches. First four tergites with pairs of dark brown blotches, distal segments uniformly pale brown (fig. 36).

Legs: Front leg uniformly pilose, tibia not produced distally (fig. 37). Ventral margin of femur and lateral margins of tibia with rows of prominent spines. Hind leg (fig. 39) femur moderately robust with a row of minute spine-like projections. Ventral margin with four trichobothria-like hairs arising from circular areas devoid of short fine hairs. Tibia and to a lesser extent tarsi covered with short fine hairs.

Fourth-5th instar, partially cleared and slide mounted (figs. 40-43): Posterior margin of head broadly pale yellowish brown, anteriorly with two (1+1) large triangular yellow blotches, remainder of head dark brown. Eyes not overlapping antero-lateral angles of pronotum. Distal lateral margins of head depressed with two (1+1) trichobothrial pits. Antennae brown, basal segment with scattered spines, fine hairs



Figs. 29-43. *Rheumatometroides browni*. – 29-31. Female, Kolombangara. – 29, ovipositor side view; 30, 2nd gonapophysis; 31, ventral aspect of 2nd gonapophysis. Scale line 0.5 mm. – 32-35. Male, Kapiura. – 32, terminal segments side view; 33, aedeagus; 34, internal sclerites; 35, paramere tilted aspect. Scale line 0.5 mm. – 36-43. Immature, Dami Creek. – 36, 40, dorsal aspect; 37, 41, front legs; 38, 42, antenna; 39, 43, hind legs. Scale line 1 mm.

Table 3. Proportions of leg segments of *Rheumatometroides browni* Hungerford and Matsuda.

	Femur	Tibia	Tarsus I	Tarsus II
Male front leg	34.5	32	4	15
Female front leg	37	31	4	17
Male middle leg	90	111	35	32
Female middle leg	94	118	37	36
Male hind leg	96	34	5.25	12
Female hind leg	102	40	7	13

Table 4. Proportions of leg segments of *Rheumatometroides browni* Hungerford and Matsuda. Immature stages.

	Femur	Tibia	Tarsus
Front leg	26	23	17
Middle leg	71	85	60
Hind leg	71	28	16

encircling distal end of segment. Remaining segments covered with fine hairs. Internodial pieces not conspicuous as in earlier instar (fig. 42). Antennal ratios 1-4 are 20 : 12 : 12 : 14. Pronotal shape similar to adult with two dark brown rectangles. Mesonotum tending towards pattern of adult. Metacetabula groove present along anterior margin close to posterior margin of metanotum. Metathoracic spiracle on lateral margin indicated by a dark brown spot. Metanotum large and pale brown, antero-laterally narrowly dark brown, posterior margin deeply concave. Abdominal segments narrowly marked with two (1+1) dark brown rectangular bars anteriorly. Legs: front femur curved and pilose, distally with a cluster of longer hairs. Tibia and tarsi covered with short fine hairs, tibia slightly produced distally (fig. 41). Hind leg moderately robust with four long trochobothria-like hairs arising from circular areas devoid of short fine hairs. Femur with a row of spine-like projections (fig. 43). Proportions of leg segments, see table 4.

Remarks. — The series from West New Britain compared with those from the Solomon Islands appear to be very similar externally, especially the colour pattern and general external morphology. The differences noted in the female ovipositor and ancillary structures of the two populations (shape of gonocoxal plate, length of paired styli, distribution of blunt serrations and apparent absence of a ventral spatulate projection on 2nd gonapophyses, as figs. 27, 29), principally may indicate that the form from West New Britain may be distinct from the Solomon Islands form. The male genitalia appear to offer little to support this hypothesis at present.

MISCELLANEOUS BIOLOGICAL NOTES

Between 23 February and 16 March, *R. serena* was collected on a number of occasions. The first specimen was recorded on 22 February, when a female was collected from beneath the CRI jetty walkway at 5 pm. Subsequent searches for a number of days starting at 7 am through to late afternoon failed to find any more specimens in the intertidal zone and more exposed areas, although occasional specimens were seen most days in late afternoon in the shade of the walkway. Scattered adult *Halobates* Eschscholtz (Gerridae) and aggregations of *Halovelina* Bergroth s. l. (Veliidae) (adults and immatures) were frequently seen. Eventually numbers of *R. serena* were found in the interstices of a coral rubble wall built to prevent erosion (8-9 March). This species appears to shun direct sunlight and exposed areas. A number of samples were collected at light (mvlt) between 25 February and 16 March. The light was run between 8-9.30 pm from the end of the jetty over water always in excess of two m deep. The largest number was found on 27 February (11 males, 6 females, 28 immatures), low tide 1.2 m, high tide 1.45 m, and on 1 March (10 males, 14 females, 10 immatures), low tide 1 m, high tide 1.5 m. It is not clear if the samples taken at light came from the populations living amongst the coral rubble, or another population which was living beneath the main landing stage. This structure is supported by a series of piers made of tyres filled with concrete. Between each tyre a layer of concrete was used, which has numerous crannies. The area around the landing stage provides shelter for many *Halobates* and veliids. A mvlt sample collected on 13 March included approximately 70 adult and 360 immature *Halobates* and about 200 veliids. An aggregation taken on 1 March during daylight within one m of shore included 200 immature *Halobates*, 500 *Halovelina* adults and 1700 immature, but no *Rheumatometroides*.

Colonies of *Halovelina* were set up in large tanks to study their behaviour. Inadvertently small numbers of *R. serena* were also introduced. Veliid mortality was extremely high under these conditions, whereas the gerrids survived. Adult *R. serena* were watched grooming, the tip of the rostrum is 'cleaned' with the tarsi of the front legs, longer middle legs are used to groom the hind legs. At rest, the gerrid supports itself on the tarsi. The first antennal segment is held curving outwards, the second and third are always aligned in a more or less straight line, the fourth curved over at internodial piece, the alignment forming a shallow sickle-like outline. Live gerrids which were inadvertently transferred to diluted sea water quickly succumbed and drowned in the laboratory. *Rheumatometroides browni* appears to be far more tolerant of lower salinities. Specimens were found up to

200 m upstream in West New Britain, Tamari Creek. Habitat preferences from both regions (Solomon Islands and West New Britain) seem to be similar, *R. browni* occurring in the zone where freshwater flows into the sea. At Dami Creek, at low tide the creek appears not to receive any inflow of sea water, but the freshwater continues to flow down the beach into the sea (pers. obs.).

Rheumatometroides tends to skate across the surface in a series of short fast spurts. Unlike *Halobates*, it does not leap across the water to avoid the net. The colony living amongst the coral rubble proved difficult to collect as individuals would run across the rubble hiding in small cracks or getting behind the rubble where the substrate was moist. Between 22 February and 16 March no pairs were seen in copula and no females were seen ovipositing.

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